

Extended Shelf-Life of Crop Plants by Reduction of Steroidal Glycoalkaloids Production (Yeda)

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Summary

Different agricultural crops from Solanaceous species which include tomato, potato and eggplant, overcome oxidative stress by the production of steroidal glycoalkaloids (SGAs) and steroidal saponins. Although SGAs contribute to plant resistance to a wide range of pathogens and predators some are considered as toxic to humans, with potato known as most relevance to food safety. This innovative technology offers improvement of nutritional composition and prolonged shelf-life of Solanaceous species, which are widely consumed crop-plants with a market size of hundreds of billions of tones produced yearly worldwide.

Applications

1. Widely used crop-plants from Solanaceae species with reduced anti-nutritional components. Leading to a longer shelf-life of crop-plants with safer nutritional compounds. 2. Highly resistant modified plant with enriched toxic steroidal glycoalkaloids content for non-edible usage.

Advantages

Prolongs shelf-life- by preventing post-harvest elevated toxicity levels.

Reduction of undesired anti-nutritional alkaloids, by means that do not affect other biological plant pathways.


Helps avoiding spoilage and toxicity of plants that manifest during storage and process.

Stress and pathogen-resistant plants for non-edible usage: Genetically modified plants with elevated toxic steroidal glycoalkaloids content will result in enhanced resistance to stress related factors. The outcome will also be prolonged shelf-life achieved in a clean economic manner (reduced need of pesticides/ insecticides).

Technology's Essence

Prof. Asaph Aharoni discovered the key genes in the biosynthesis of steroidal saponins and steroidal alkaloids in his lab at the Weizmann institute. He also developed a method for altering the gene expression and the production (reduction or elevation) of these components in plants from the Solanaceae species.

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